



CLEAN VERSION OF ALL PENDING CLAIMS

45. A method of compiling a positive sense functional gene profile of an organism comprising:

(a) preparing a library of DNA or RNA sequences from a non-plant donor organism, and constructing recombinant viral nucleic acids comprising an unidentified nucleic acid insert obtained from said library in a positive sense orientation;

(b) infecting a plant host with one or more said recombinant viral nucleic acids;

(c) transiently expressing the unidentified nucleic acid in said plant host;

(d) determining one or more phenotypic or biochemical changes in said plant host;

(e) identifying said recombinant viral nucleic acid that results in said one or more changes in said plant host;

(f) repeating steps (b) - (e) until a positive sense functional gene profile of said plant host or said donor organism is compiled.

58. The method according to Claim 45, further comprising a step of identifying a donor gene associated with said changes.

59. The method according to Claim 45, further comprising a step of identifying a host plant gene associated with said changes.

60. The method according to Claim 45, wherein said plant host is *Nicotiana*.

61. The method according to Claim 60, wherein said plant host is *Nicotiana benthamina* or *Nicotiana cleavlandii*.

62. The method according to Claim 45, wherein a positive sense RNA is produced in the cytoplasm of said plant host, and said positive sense RNAs results in a reduced or enhanced expression of an endogenous gene in said plant host.

63. The method according to Claim 45, wherein a positive sense RNA is produced in the cytoplasm of said host plant, and said positive sense RNA results in overexpression of a protein in said host plant.

64. The method according to Claim 45, wherein said recombinant viral nucleic acid further comprises a native plant viral subgenomic promoter and a plant viral coat protein coding sequence.

65. The method according to Claim 64, wherein said recombinant viral nucleic acid further comprises a non-native plant viral subgenomic promoter, said native plant viral subgenomic promoter initiates transcription of said plant viral coat protein sequence and said non-native plant viral subgenomic promoter initiates transcription of said nucleic acid sequence.

66. The method according to Claim 45, wherein said recombinant viral nucleic acids are obtained from a plant virus.

67. The method according to Claim 66, wherein said plant virus is a single-stranded plus sense RNA virus.

68. The method according to Claim 67, wherein said plant virus is selected from the group consisting of a potyvirus, a tobamovirus, and a bromovirus..

69. The method according to Claim 68, wherein said tobamovirus is a tobacco mosaic virus.

70. The method according to Claim 68, wherein said potyvirus is a rice necrosis virus.